AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1. (currently amended) An imaging system for use in medical intervention procedure planning involving a coronary sinus, comprising:

a medical scanner system for generating a volume of cardiac image data using a protocol configured for imaging the coronary sinus;

a data acquisition system for acquiring the volume of cardiac image data;

an image generation system for generating at least one viewable image from the volume of cardiac image data through dynamic segmentation;

a database for storing information from said data acquisition and image generation systems;

an operator interface system for managing at least one of said medical scanner system, said data acquisition system, said image generation system, and said database;

a post-processing system for analyzing the volume of cardiac image data, inserting a geometric marker into the volume of cardiac image data at an anatomical landmark, selecting a viewable parameter in response to the geometric marker at the anatomical landmark, and displaying the at least one viewable image and being responsive to said operator interface system; and wherein

said operator interface system comprises instructions for using and saving at least one of the volume of cardiac image data, the at least one viewable image, the anatomical landmark, and a measured viewable parameter, in at least one of a bi-ventricular pacing planning, an atrial fibrillation planning, and an atrial flutter planning procedure, that involves the coronary sinus.

2. (original) The imaging system of Claim 1, wherein said medical scanner system comprises at least one of a CT system, a MR system, an Ultrasound system, a 3D Fluoroscopy system, and a PET system.

3. (currently amended) The imaging system of Claim 1, wherein said database includes storage for storing image data of ~~at least one of~~ the right atrium and ~~the~~ coronary sinus.

4. (currently amended) The imaging system of Claim 1, wherein said database includes storage for storing the at least one viewable image of ~~at least one of the~~ right atrium and the coronary sinus.

5. (currently amended) The imaging system of Claim 1, wherein said operator interface system includes instructions for segmenting the volume of cardiac image data for viewing ~~at least one of~~ the right atrium and the coronary sinus.

6. (original) The imaging system of Claim 5, wherein said operator interface system includes instructions for viewing the at least one viewable image in different planes.

7. (currently amended) The imaging system of Claim 5, wherein said post-processing system includes instructions for:

determining whether an arterial-phase or a venous-phase contrast study is under review;

dynamically adjusting a segmentation threshold in preparation for performing vessel tracking of the coronary sinus from the volume of cardiac image data, thereby enabling the coronary sinus to be tracked for both arterial-phase and venous-phase contrast enhanced studies; and

performing vessel tracking of the coronary sinus from the volume of cardiac image data.

8. (original) The imaging system of Claim 7, wherein said instructions further include instructions for performing vectorial vessel tracking along the centerline of the viewable image of the coronary sinus.

9. (original) The imaging system of Claim 1, wherein said post-processing system is adapted to display the at least one viewable image in at least one of a three-dimensional surface rendering, a three-dimensional inner surface rendering, a three-dimensional volume rendering, MPVR, MIP, curved reformat, lumen view, and an immersible view.

10. (currently amended) The imaging system of Claim 9, wherein said post-processing system is further adapted to display a viewable image of ~~at least one of~~ the heart, the coronary sinus and the right atrium.

11. (original) The imaging system of Claim 10, wherein said post-processing system is further adapted to display a geometric marker at an anatomical or external landmark.

12. (original) The imaging system of Claim 11, wherein said post-processing system is further adapted to display a viewable image of the coronary sinus in a translucent fashion and the geometric landmark in an opaque fashion.

13. (original) The imaging system of Claim 10, wherein said post-processing system is further adapted to display a first image of the heart in a translucent fashion and a second image of the coronary sinus in an opaque fashion.

14-15. (cancelled)

16. (currently amended) A method for generating an image for use in medical intervention procedure planning involving a coronary sinus, comprising:

acquiring a volume of cardiac image data from a medical scanner using a protocol configured for imaging the coronary sinus;

managing the volume of cardiac image data through segmentation;

processing the cardiac image data for viewing;

viewing the cardiac image data in at least one viewable image;

inserting a geometric marker into the volume of cardiac image data at an anatomical landmark for subsequent visualization, analysis and registration;

selecting a viewable parameter in response to the geometric marker at the anatomical landmark; and

saving at least one of at least one viewable image, an anatomical landmark, and a measured viewable parameter, in an image database.

17. (currently amended) The method for generating an image as set forth in Claim 16, further comprising:

exporting at least one 3D model containing the saved information to an image database;

importing the at least one 3D model into an operator interface system;

registering the at least one 3D model with the corresponding selected anatomical landmark having the inserted geometric marker and the measured viewable parameter; and

visualizing the at least one 3D model at the operator interface system with the selected viewable parameters mapped thereon.

18. (original) The method for generating an image as set forth in Claim 16, wherein said acquiring a volume of cardiac image data further comprises:

acquiring a volume of cardiac image data using at least one of a CT system, a MR system, an Ultrasound system, a 3D Fluoroscopy system, and a PET system.

19. (currently amended) The method of generating an image as set forth in Claim 16, wherein said managing the volume of cardiac image data further comprises:

segmenting the volume of cardiac image data for viewing ~~at least one of a right atrium and a~~ the coronary sinus and associated right atrium.

20. (original) The method of generating an image as set forth in Claim 16, wherein said processing the cardiac image data further comprises:

processing the cardiac image data for viewing at least one of a three-dimensional model, a three-dimensional surface rendering, a three-dimensional inner surface rendering, a three-dimensional volume rendering, MPVR, MIP, curved reformat, lumen view, and an immersible view.

21. (currently amended) The method of generating an image as set forth in Claim 20, wherein said processing the cardiac image data further comprises:

processing the cardiac image data for viewing ~~at least one of a~~ the coronary sinus and ~~a~~ associated right atrium.

22. (original) The method of generating an image as set forth in Claim 21, further comprising:

performing vessel tracking of the coronary sinus from the volume of cardiac image data.

23. (original) The method of generating an image as set forth in Claim 22, further comprising:

performing vectorial vessel tracking along the centerline of the immersible view of the coronary sinus.

24. (currently amended) The method of generating an image as set forth in Claim 16, wherein said inserting a geometric marker into the volume of cardiac image data further comprises:

inserting a geometric marker at an anatomical landmark identifying at least one substructure of ~~a~~ the coronary sinus and ~~a~~ associated right atrium.

25. (original) The method of generating an image as set forth in Claim 16, wherein said selecting a viewable parameter further comprises:

selecting a viewable parameter of the coronary sinus vessel wherein the viewable parameter comprises at least one of a vessel diameter, a vessel segment path length, and a degree of vessel curvature.

26. (original) The method of generating an image as set forth in Claim 25, further comprises:

measuring the viewable parameter.

27. (original) The method of generating an image as set forth in Claim 24, wherein said viewing the cardiac image data further comprises:

viewing the at least one viewable image of the coronary sinus in a translucent fashion and viewing the geometric landmark in an opaque fashion.

28. (original) The method of generating an image as set forth in Claim 16, wherein said viewing the cardiac image data further comprises:

viewing an image of the heart in a translucent fashion and viewing an image of the coronary sinus in an opaque fashion.

29. (original) The method of generating an image as set forth in Claim 17, wherein said exporting a 3D model further comprises:

exporting a 3D model in at least one of a wire mesh geometric model, a solid geometric model, a set of contours associated with each image slice, a segmented volume of binary images, a run-length encoded binary segmentation mask, and a medical digital imaging object using a radiation therapy medical digital imaging object standard.

30. (original) The method of generating an image as set forth in Claim 17, wherein said visualizing the 3D model further comprises:

viewing the 3D model in different planes.

31-33. (cancelled)

34. (new) The method for generating an image as set forth in Claim 16, further comprising:

determining whether an arterial-phase or a venous-phase contrast study is under review; and

in response to a venous-phase contrast study being under review, filtering the volume of cardiac image data to remove heart chamber blood pools.

35. (new) The method for generating an image as set forth in Claim 34, further comprising:

in response to an arterial-phase contrast study being under review, determining whether high quality tracking is to be performed;

if high quality tracking is to be performed, filtering the volume of cardiac image data to remove heart chamber blood pools and high intensity coronary arteries; and

if high quality tracking is not to be performed, selecting a low intensity segmentation threshold in preparation for performing vessel tracking of the coronary sinus from the volume of cardiac image data.

36. (new) The method for generating an image as set forth in Claim 16, further comprising:

determining whether an arterial-phase or a venous-phase contrast study is under review; and

dynamically adjusting a segmentation threshold in preparation for performing vessel tracking of the coronary sinus from the volume of cardiac image data, thereby enabling the coronary sinus to be tracked for both arterial-phase and venous-phase contrast enhanced studies.

37. (new) The method for generating an image as set forth in Claim 16, wherein the managing the volume of cardiac image data comprises:

managing the volume of cardiac image data through dynamic segmentation

38. (new) A method for generating an image for use in medical intervention procedure planning involving the coronary sinus, comprising:

determining from an acquired volume of cardiac image data, the cardiac image data having been received using a medical scanner and a protocol configured for imaging the coronary sinus, whether an arterial-phase or a venous-phase contrast study is under review; and

dynamically adjusting a segmentation threshold in preparation for performing vessel tracking of the coronary sinus from the volume of cardiac image data, thereby enabling the coronary sinus to be tracked for both arterial-phase and venous-phase contrast enhanced studies.

39. (new) The method of Claim 38, further comprising:

processing the cardiac image data for viewing;

viewing the cardiac image data in at least one viewable image;

inserting a geometric marker into the volume of cardiac image data at an anatomical landmark for subsequent visualization, analysis and registration;

selecting a viewable parameter in response to the geometric marker at the anatomical landmark; and

saving at least one of at least one viewable image, an anatomical landmark, and a measured viewable parameter, in an image database.

40. (new) The method of Claim 1, wherein:

said post-processing system is also for blending the volume of cardiac image data with the inserted geometric marker into an interventional system thereby enabling use of the volume of cardiac image data with the inserted geometric marker during an interventional procedure on a patient.